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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/717,326

11/18/2003

Thomas W. Stone

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02/02/2005

AGILENT TECHNOLOGIES, INC.

Intellectual Property Administration

Legal Department, DL 429

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EXAMINER

KIM, JOANNE H

ART UNIT

PAPER NUMBER

2883

DATE MAILED: 02/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/717,326

Applicant(s)

STONE, THOMAS W.

Examiner

Joanne H. Kim

Art Unit

2883

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 2 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 November 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3-13, 18 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bouevitch (U.S. Patent Publication No. US 2003/0021526).

3. Regarding claims 1 and 3, Bouevitch discloses a method for compensating for a chromatic dispersion in optical system comprising the steps of: separating input optical radiation into chromatic components; propagating the chromatic components through the optical system by reflecting the chromatic components from a modifying means such as a switchable pixellated mirrors, and providing a pre-selected relationship, which compensates for the chromatic dispersion, between optical path lengths of the chromatic components; and recombining the chromatic components after propagating through the optical system (paragraphs [0003], [0061] and [0086]; and Fig. 5b). Further, Bouevitch discloses that the modifying means may include mirrors or any optical element capable of modifying a property of at least a portion of a beam of light and reflecting the modified beam of light (paragraph [0075]).

Bouevitch does not specifically disclose reflecting the chromatic components from a holographic mirror.

MPEP 2183 states that if a prior art element performs the function specified in the claim, and produces substantially the same results as the corresponding element disclosed in the specification, the prior art element is an equivalent. *Kemco Sales, Inc. v. Control Papers Co.*, 208 F.3d 1352, 54 USPQ2d 1308 (Fed. Cir. 2000). In this case, the mirror of Bouevitch performs the function specified in the claim, which is reflecting the distinct chromatic components, and compensates for the chromatic dispersion.

Accordingly, It would have been obvious to one of ordinary skill in the art to substitute a holographic mirror for the mirror of Bouevitch to reflect the chromatic components since these two are equivalents.

4. Regarding claim 4, Bouevitch discloses focusing the input optical radiation (paragraph [0102]).
5. Regarding claim 5, Bouevitch discloses propagating the input optical radiation through at least one separating diffraction grating (Fig. 1b; and paragraph [0061], lines 1-5).
6. Regarding claim 6, Bouevitch discloses propagating the chromatic components through at least one recombining diffraction grating (Fig. 1b; and paragraph [0061], lines 12-15).
7. Regarding claim 7, Bouevitch discloses that the at least one recombining diffraction grating is the same as the at least one separating diffraction grating (Fig. 1b; and paragraph [0061], lines 4-5 and 14-15).
8. Regarding claims 8 and 11, Bouevitch discloses a chromatic dispersion compensated optical system comprising: an optical separating sub-system (120)

capable of separating input optical radiation into chromatic components; an optical recombining sub-system (120) capable of recombining the chromatic components for output; and an optical reflector (i.e., a pixellated switchable mirrors) capable of reflecting the chromatic components and providing a pre-selected relationship between optical path lengths through the optical systems of the chromatic components, said pre-selected relationship compensating chromatic dispersion, said optical reflector being optically disposed between said optical separating sub-system and said optical recombining sub-system (Fig. 1b; paragraph [0003]; and paragraph[0061], lines 4-15).

Bouevitch does not specifically disclose that the optical reflector is a volume holographic mirror.

As discussed above in paragraph 3, the optical reflector of Bouevitch is an equivalent of the holographic mirror recited in the claim since the optical reflector performs the function specified in the claim (i.e., reflecting) and produces substantially the same results (i.e., compensate for the chromatic dispersion) as the corresponding element disclosed in the specification.

Accordingly, it would have been obvious to one of ordinary skill in the art to substitute a holographic mirror for the mirror of Bouevitch to reflect the chromatic components since these two are equivalents.

9. Regarding claim 9, Bouevitch discloses a switchable liquid crystal array (130 in Figs. 3a and 3b, and 527 in Fig. 5a) interposed between the reflector and the optical recombining sub-system (Figs. 1b; and paragraph [0085], lines 6-15).

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10. Regarding claim 10, Bouevitch discloses an optical focusing component (990) capable of focusing separated input optical radiation onto the volume optical reflector (Fig. 9).

11. Regarding claim 12, Bouevitch discloses that the optical recombining sub-system is the same as the optical separating sub-system (Fig. 1b; and paragraph [0061], lines 4-5 and 14-15).

12. Regarding claims 13 and 18, Bouevitch discloses a directing optical element (110b) capable of directing the separated input optical radiation to the optical reflector, and a redirecting optical element capable of redirecting optical radiation reflected from the optical reflector to the switchable element (144 and 146) (Figs. 1b, 3a and 3b).

13. Regarding claim 21, Bouevitch discloses that the volume optical reflector comprises a phase conjugate mirror (610 in Fig. 6a).

14. Claims 14-17 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bouevitch in view of Shirasaki et al. (U.S. Patent Publication No. US 2002/0114090, herein after "Shirasaki").

15. Regarding claims 14 and 19-20, Bouevitch discloses a chromatic dispersion compensated optical system comprising: a separating diffraction grating (120) capable of separating input optical radiation into chromatic components; a recombining diffraction grating (120) capable of recombining the chromatic components; an optical reflector (526 in Fig. 5a and 552 in Fig. 5b) capable of reflecting the chromatic components and providing a pre-selected relationship, which compensates chromatic

dispersion, between optical path lengths through the optical systems of the chromatic components; and a switchable element (527) capable of receiving the separated chromatic components and outputting separating output chromatic components interposed between the optical reflector and the recombining diffraction grating (Fig 1b; paragraph [0061], lines 4-15).

Bouevitch does not disclose a pair of separating diffraction gratings and a pair of recombining diffraction gratings.

Shirasaki discloses a spatial grating pair arrangement including a pair of separating diffraction gratings (68 and 71) used to compensate for chromatic dispersion (Fig. 6; and paragraph [0015]).

It would have been obvious to modify Bouevitch to include a pair of separating diffraction gratings such as that taught by Shirasaki in order to provide additional compensation for chromatic dispersion. Further, since the separating diffraction grating is the same as the recombining diffraction grating in Bouevitch, Bouevitch in view of Shirasaki also discloses a pair of the recombining diffraction gratings.

The combination of Bouevitch and Shirasaki does not specifically disclose that the optical reflector is a volume holographic mirror.

However, as discussed above in paragraph 3, it would have been obvious to one of ordinary skill in the art to substitute a volume holographic mirror for the optical reflector of Bouevitch since these two are equivalents.

16. Regarding claims 15 and 16, Bouevitch discloses a switchable liquid crystal array (527 in Fig. 5) and an optical focusing component (990) capable of focusing separated input optical radiation onto the volume optical reflector (Fig. 9).

17. Regarding claim 17, Bouevitch discloses that the recombining diffraction grating is the same as the separating diffraction grating (Fig. 1b and paragraph [0061], lines 4-5 and 14-15).

### ***Response to Amendment***

18. Applicant's arguments with respect to claims 1 and 3-21 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues that Bouevitch does not disclose a volume holographic mirror and "due to the difference in operation of holographic mirror as compared to the simple reflector disclosed by Bouevitch, there are intrinsic characteristics and advantages of the Applicant's invention which are absent in Bouevitch."

However, the claims of the present application merely recite separating input optical radiation, reflecting separated chromatic components and recombining the separated chromatic components to compensate for the chromatic dispersion.

Bouevitch discloses the same structure producing substantially the same result. As for the holographic mirror, as discussed above, an optical reflector of Bouevitch performs the identical function specified in the claim in substantially the same way, and produces substantially the same results (i.e., reflecting distinct chromatic components for compensating for the chromatic dispersion) as the corresponding element disclosed in



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the specification. Therefore, these two are equivalents and it would have been obvious to substitute one for the other.

### ***Conclusion***

19. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action:

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joanne H. Kim whose telephone number is (571) 272-2139. The examiner can normally be reached on 8:30 a.m. to 5:00 p.m.

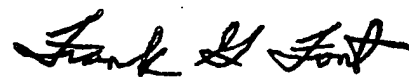
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Art Unit 2883

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